

US EPA ARCHIVE DOCUMENT

4-1-92

D175594  
DPBARCODE (RECORD)  
113201  
SHAUGHNESSY NO

REVIEW NO.

EEB REVIEW

APR 1 - 1992

DATE IN: 03-17-92 OUT: \_\_\_\_\_

CASE # : 283345 REREG CASE # : \_\_\_\_\_  
SUBMISSION # : S412879 LIST A, B, C, D  
ID # : 92OR0013

DATE OF SUBMISSION 03-03-92

DATE RECEIVED BY EFED 03-17-92

SRRD/RD REQUESTED COMPLETION DATE 04-02-92

EEB ESTIMATED COMPLETION DATE 04-02-92

SRRD/RD ACTION CODE/TYPE OF REVIEW 510 - Sec 18

MRID #(S) \_\_\_\_\_

DP TYPE 001 - Submission Related Data package

PRODUCT MANAGER, NO. R. Cool (41)

PRODUCT NAME(S) Ronilan

TYPE PRODUCT F R I N H D Fungicide

COMPANY NAME Oregon Dept. of Agriculture

SUBMISSION PURPOSE Review proposed emergency exemption

INCLUDE USE(S) for use on snap beans

COMMON CHEMICAL NAME Vinclozolin

DP BARCODE: D175594

CASE: 283345  
SUBMISSION: S412879

DATA PACKAGE RECORD  
BEAN SHEET

DATE: 03/13/92  
Page 1 of 1

\* \* \* CASE/SUBMISSION INFORMATION \* \* \*

CASE TYPE: EMERGENCY EXEMP ACTION: 510 SEC18-OC F/F USE  
CHEMICALS: 113201 3-(3,5-Dichlorophenyl)-5-ethenyl-5-methyl-2,4-oxaz

ID#: 92OR0013

COMPANY:

PRODUCT MANAGER: 41 REBECCA COOL 703-305-7717 ROOM: CM2 720  
PM TEAM REVIEWER: LIBBY PEMBERTON 703-305-5309 ROOM: CM2 716A  
RECEIVED DATE: 03/03/92 DUE OUT DATE: 04/22/92

\* \* \* DATA PACKAGE INFORMATION \* \* \*

DP BARCODE: 175594 EXPEDITE: N DATE SENT: 03/13/92 DATE RET.: / /  
CHEMICAL: 113201 3-(3,5-Dichlorophenyl)-5-ethenyl-5-methyl-2,4-oxazolidinedi  
DP TYPE: 001 Submission Related Data Package  
ADMIN DUE DATE: 04/12/92 CSF: N LABEL: N

ASSIGNED TO	DATE IN	DATE OUT
DIV : EFED	03/17/92	/ /
BRAN: EEB	03/17/92	/ /
SECT:	/ /	/ /
REVR :	/ /	/ /
CONTR:	/ /	/ /

\* \* \* DATA REVIEW INSTRUCTIONS \* \* \*

Please update 1989 review, attached.

\* \* \* ADDITIONAL DATA PACKAGES FOR THIS SUBMISSION \* \* \*

DP BC	BRANCH/SECTION	DATE OUT	DUE BACK	INS	CSF	LABEL
-------	----------------	----------	----------	-----	-----	-------

EEB REVIEW  
RONILAN (VINCLOZOLIN) SECTION 18

100.0      Submission Purpose and Label Information

100.1      Submission Purpose and Pesticide Use

Request for a specific exemption to use Ronilan (Vinclozolin) on snap beans in Oregon.

100.2      Formulation Information

Active ingredient

3-(3,5-Dichlorophenyl)-5-Ethenyl-5-Methyl-2, 4-Oxazolidinedione...50%

Inert ingredients.....50%

100.3      Application Methods, Directions, Rates

The rate of application is 1 lb of Ronilan 50DF (.5 lb a.i.) per application, with a maximum of 2 applications. The second application will likely be needed 7 days after the first. When ground equipment is used, Ronilan will be made with 40-100 gallons of water per acre. When Ronilan is aerially applied, only 15 gallons of water per acre is used.

Applications will be made when at least 20% of the plants have one bloom open (approx. May 1, 1992-September 30, 1992). The pre-harvest interval will be nine days.

100.4      Target Organisms

Gray mold, *Botrytis cinerea*

White mold, *Sclerotinia Sclerotiorum*

100.5      Precautionary Labeling

None submitted.

101.0      Hazard Assessment

101.1      Discussion

This emergency exemption has been requested to allow the use of Ronilan, a fungicide, on snap beans in Oregon. EEB has records of several prior Section 18's under similar circumstances. The earliest such record is from 1985. The current petition allows for a maximum of 48,000 lbs a.i. to be used on approximately 24,000 acres of beans.

Ronilan is currently registered for application on onions (dry bulb), stone fruit, raspberries, strawberries, and lettuce.

## 101.2 Likelihood of Adverse Effects to Nontarget Organisms

### Environmental Fate Data

Data was obtained from the Environmental Fate and Groundwater Branch (EFGWB) One-Liners. This data is considered supplemental, and additional data has been requested (most of the data will be asked for during phase 5).

. At 20 °C, vinclozolin is slightly soluble in water (2.6g/100g).

. The hydrolytic half-life varies greatly according to pH:

3.....70 days

6.....61 hours

9.....12 minutes

. The photolytic half-life in water ranges from < 4 hours at pH 2-3 to no photolysis at pH 1.94.

. The photolysis on soil half-life for vinclozolin on loam is 19 days.

. Aerobic soil metabolism studies have shown half-lives ranging from 3-4 days on loam soil to ~~63-147~~ <sup>21-49</sup> days on loamy sand (pH 6.8).

. Anaerobic soil metabolism half-lives were found to be "slower than aerobic."

. The anaerobic aquatic metabolism studies showed half-lives of 6.4 days in water and 126 days in silty loam sediment.

### Aquatic Hazard

According to the current data, vinclozolin is considered moderately toxic to both warm and coldwater fish (Bluegill (*Lepomis gibbosus*) 96-hour  $LC_{50}$  > 3.4 ppm and Rainbow trout 96-hour  $LC_{50}$  = 2.8 ppm). The Rainbow trout study, however, does not fulfill guideline requirements as the temperature during the study was too high.

The 48-hour  $EC_{50}$  for *Daphnia magna* of 4 ppm characterizes vinclozolin as moderately toxic to freshwater invertebrates.

### Aquatic Exposure

With a single aerial application of .5 pound a.i. of vinclozolin, the estimated environmental concentration (EEC) that would be expected in a one acre pond that is 6 feet or 6 inches deep is 5.2 or 62.4 ppb, respectively (see attachment A).

According to the above EECs, a single application of vinclozolin should pose minimal hazard to aquatic species. With a second application, there is still no concern for non-endangered aquatic species, but the aquatic endangered species trigger is neared.

### Terrestrial Hazard

Vinclozolin may be characterized as practically nontoxic on a dietary basis (Bobwhite quail, *Colinus virginianus* and Mallard duck, *Anas platyrhynchos*,  $LC_{50} > 5620$  ppm)

Vinclozolin may also be characterized as practically non-toxic on an acute basis to avian species (Bobwhite quail),  $LD_{50} > 2510$  mg a.i./kg.

Vinclozolin may be characterized as practically nontoxic to rats ( $LD_{50} > 10$  g/kg).

### Terrestrial Exposure

With one application of .5 lb a.i., the following terrestrial residues can be expected:

SHORT RANGE GRASS	LONG RANGE GRASS	LEAVES	FORAGE	PODS AND SEEDS	FRUIT
120 ppm	55 ppm	62.5 ppm	29 ppm	6 ppm	3.5 ppm

Use of vinclozolin on an acute basis poses minimal hazard to avian and mammalian species. Even two uses of the chemical does not surpass the non-endangered or endangered species triggers obtained from acute testing (1/5 or 1/10 of  $LC_{50}$ ). However, there is concern of adverse reproductive effects on birds exposed to vinclozolin on a chronic basis. Avian reproduction studies performed in 1982 indicated that vinclozolin affected egg viability of mallards at a level of 50 ppm and quail at 5 and 50 ppm (although quail results were not statistically significant). The studies, considered core at the time, have since been reconsidered. The mallards were wild caught and their unknown age could introduce substantial variability into the study. In the quail study, the percentage of cracked eggs in the control was too high and no NOEL was found. Further, the concentrations of vinclozolin employed in both tests do not adequately represent expected terrestrial residue values. Both of these studies should be repeated. In response to concerns from the Canadian Wildlife Service that vinclozolin affects testicular development, a special test on male fertility was performed. This study indicated that there was no reduction in male fertility from concentrations of vinclozolin ranging from 2.5-50 ppm. Canadian officials have recommended that the product not be registered in their country.

### Nontarget Insects

Vinclozolin also tested as practically nontoxic to honeybees ( $LD_{50} > 100$  ug/bee).

### Nontarget Plants

The hazard to non-target plants can not be assessed as no nontarget plant testing has been performed. Current guidelines require that a single aquatic plant growth study with *Selenestrum capricornutum* be performed for fungicides that are aerially applied.

#### **101.3      Endangered Species Consideration**

No aquatic endangered species concerns arise from this petition. However, there are terrestrial concerns. Several endangered bird species are found in the bean growing counties of Oregon: bald eagle, American peregrine falcon, Aleutian Canada goose, marbled murrelet, and brown pelican. Of these birds, only the goose's feeding habits places it at risk to the use of vinclozolin on snap beans. Although the avian reproductive data is not considered adequate to fulfill guideline requirements, the data does suggest that egg viability is reduced at 50 ppm, and possibly even as low as 5 ppm. The risk to the Aleutian Canada goose is reduced by the time period for Ronilan applications--the chemical will likely be applied between May and September and the geese will most likely leave their Oregon wintering grounds by April, not returning until approximately October. However, some exposure is possible due to overlap and persistence of the chemical (7 weeks).

The risk to endangered plants can not be assessed.

#### **101.4      Adequacy of Toxicity Data**

The available data is not adequate to assess hazards to all non-target species under the proposed exemption. It is apparent that a possible hazard to birds exists through chronic use of vinclozolin. The two avian reproduction studies need to be repeated to better assess this risk. The LC<sub>50</sub> study on Rainbow trout also needs to be repeated (registrant has agreed to do so). Finally, due to the use of aerial application, an aquatic plant study on *Selenestrum capricornutum* should be performed.

#### **101.5      Adequacy of Labeling**

No environmental hazards labeling was submitted with this petition. The following should be included with the application instructions: "Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high-water mark."

#### **102.0      Classification**

Not classified.

# 103.0 Conclusions

No aquatic non-target species concerns arise from this petition.

Although the avian reproductive data is not considered adequate to fulfill guideline requirements, the data does suggest that egg viability is reduced in birds exposed to 50 ppm vinclozolin, and possibly even as low as 5 ppm. Expected terrestrial residues on pods, insects, forage, leaves, long grass, and short grass all are issues of concern. With the allowed two applications, fruit may be added to the list of food items with residues high enough to raise concern. Even if the more conservative value of 50 ppm vinclozolin in the diet is used as the level of concern, with two applications, forage, leaves, and long and short grass all surpass this value. This concern is compounded by the aerial applications of Ronilan that allow for widespread exposure, the 3-7 week aerobic soil half-life, and the section 18s that have been granted for its use of snap beans in Oregon since 1985.

The Aleutian Canada goose is the only federally endangered species whose feeding habits puts it at risk to the use of vinclozolin on snap beans. The risk to the Aleutian Canada goose is reduced by the time period for Ronilan applications--the chemical will likely be applied between May and September and the geese will most likely have leave their Oregon wintering grounds by April, not returning until approximately October. However, some exposure is possible due to overlap and persistence of the chemical.

Several studies are still required for adequate environmental assessment of use of vinclozolin on snap beans:

- . Avian reproduction studies with mallard and quail
- . LC<sub>50</sub> study with Rainbow trout
- . Aquatic plant growth study with *Selenestrum capricornutum*.

Pending the results of the above studies, further testing may be required.

There is a contradiction in the application information of the petition submitted by Oregon. The petition first states that .5 lb a.i. may be applied twice and then explains that 48,000 lbs a.i. may be applied on the 24,000 acres of beans. The latter explanation indicates usage of 1 lb a.i. per acre. All calculations for this proposed emergency use exemption have been performed with .5 lb a.i., the amount allowed for Oregon in past years.

Heather Mansfield, Zoologist, Section 2  
Ecological Effects Branch  
Environmental Fate and Effects Division (H7507C)

*Heather Mansfield*  
3/30/92

Allen Vaughan, Acting Head, Section 2  
Ecological Effects Branch  
Environmental Fate and Effects Division (H7507C)

*Allen W. Vaughan*  
3-30-92

Douglas J. Urban, Acting Chief  
Ecological Effects Branch  
Environmental Fate and Effects Division (H7507C)

*Douglas J. Urban*  
3/31/92



EEC CALCULATION SHEETI. For un-incorporated ground application

## A. Runoff

$$\text{___ lb(s)} \times \frac{0.02}{(\% \text{ runoff})} \times \frac{10 \text{ (A)}}{(\text{from 10 A. drainage basin})} = \text{___ lb(s)} \quad (\text{tot. runoff})$$

EEC of 1 lb a.i. direct application to 1 A. pond 6-foot deep = 61 ppb

$$\text{Therefore, EEC} = 61 \text{ ppb} \times \text{___ (lb)} = \text{___ ppb}$$

II. For incorporated ground application

## A. Runoff

$$\text{___ lb(s)} \div \frac{\text{___ (cm)}}{(\text{depth of incorporation})} \times \frac{0.02}{(\% \text{ runoff})} \times \frac{10 \text{ (A)}}{(10 \text{ A. d. basin})} = \text{___ lb(s)} \quad (\text{tot. runoff})$$

$$\text{Therefore, EEC} = 61 \text{ ppb} \times \text{___ (lbs)} = \text{___ ppb}$$

III. For aerial application (or mist blower)

## A. Runoff

$$\underline{.5} \text{ lb(s)} \times \frac{0.5}{(\text{appl. efficiency})} \times \frac{0.02}{(2\% \text{ runoff})} \times \frac{10 \text{ (A)}}{(10 \text{ A. d. basin})} = \underline{.06} \text{ lb(s)} \quad (\text{tot. runoff})$$

## B. Drift

$$\underline{.5} \text{ lb(s)} \times \frac{0.05}{(5\% \text{ drift})} = \underline{.025} \text{ lb(s)} \quad (\text{tot. drift})$$

$$\text{Tot. loading} = \frac{.06 \text{ lb(s)}}{(\text{tot. runoff})} + \frac{.025 \text{ lb(s)}}{(\text{tot. drift})} = \underline{.085} \text{ lb(s)}$$

$$\text{Therefore, EEC} = 61 \text{ ppb} \times \underline{.085} \text{ (lbs)} = \underline{5.185} \text{ ppb}$$

$$734 \text{ ppb} \times .085$$

$$= 62.39 \text{ for } 6 \text{ inch}$$

Solubility in H<sub>2</sub>O = 2.6 @ 20°C

∴ ~ 290 runoff

## DAILY ACCUMULATED PESTICIDE RESIDUES---MULTP. APPL.

Chemical name -----		VINCLOZOLIN-SHORT GRASS	
Initial concentration (ppm) -----		120	
Half-life -----		49	
A number of application -----		2	
Application interval -----		7	
Length of simulation (day) -----		100	

  

DAY	RESIDUE	37	149.6019	80	81.4269
(PPM)		38	147.5006	81	80.28316
---		39	145.4287	82	79.15547
-----		40	143.386	83	78.04363
		41	141.3719	84	76.94741
		42	139.3862	85	75.86659
0	120	43	137.4283	86	74.80095
1	118.3145	44	135.498	87	73.75027
2	116.6526	45	133.5947	88	72.71436
3	115.014	46	131.7182	89	71.69298
4	113.3985	47	129.8681	90	70.68596
5	111.8057	48	128.0439	91	69.6931
6	110.2352	49	126.2454	92	68.71416
7	228.6868	50	124.4721	93	67.74899
8	225.4747	51	122.7237	94	66.79736
9	222.3076	52	120.9999	95	65.85911
10	219.185	53	119.3003	96	64.93403
11	216.1062	54	117.6246	97	64.02195
12	213.0708	55	115.9724	98	63.12269
13	210.0779	56	114.3434	99	62.23605
14	207.1271	57	112.7373	100	61.36186
15	204.2177	58	111.1538		
16	201.3492	59	109.5925		
17	198.521	60	108.0531		
18	195.7325	61	106.5354		
19	192.9832	62	105.039		
20	190.2725	63	103.5635		
21	187.5999	64	102.1089		
22	184.9648	65	100.6746		
23	182.3668	66	99.2605		
24	179.8052	67	97.86626		
25	177.2796	68	96.49159		
26	174.7895	69	95.13626		
27	172.3343	70	93.79994		
28	169.9137	71	92.4824		
29	167.527	72	91.18336		
30	165.1739	73	89.90258		
31	162.8538	74	88.63979		
32	160.5663	75	87.39473		
33	158.311	76	86.16716		
34	156.0873	77	84.95682		
35	153.8948	78	83.76351		
36	151.7332	79	82.58694		

  

Maximum residue:  
228.6868

Average residue:  
126.5266

DAILY ACCUMULATED PESTICIDE RESIDUES---MULTP. APPL.

Chemical name -----	VINCLOZOLIN-FORAGE
Initial concentration (ppm) -----	29
Half-life -----	49
A number of application -----	2
Application interval -----	7
Length of simulation (day) -----	100

  

DAY	RESIDUE		
(PPM)			
- - -			
-----			
0	29	38	35.64597
1	28.59266	39	35.14527
2	28.19104	40	34.65161
3	27.79506	41	34.16488
4	27.40464	42	33.685
5	27.01971	43	33.21185
6	26.64018	44	32.74534
7	55.26599	45	32.28539
8	54.48971	46	31.8319
9	53.72433	47	31.38478
10	52.9697	48	30.94394
11	52.22568	49	30.5093
12	51.4921	50	30.08076
13	50.76883	51	29.65823
14	50.05571	52	29.24165
15	49.35262	53	28.83091
16	48.6594	54	28.42594
17	47.97591	55	28.02667
18	47.30203	56	27.63299
19	46.63761	57	27.24485
20	45.98253	58	26.86216
21	45.33664	59	26.48485
22	44.69983	60	26.11284
23	44.07197	61	25.74605
24	43.45292	62	25.38441
25	42.84257	63	25.02785
26	42.24079	64	24.67631
27	41.64746	65	24.3297
28	41.06247	66	23.98795
29	40.4857	67	23.65101
30	39.91702	68	23.3188
31	39.35634	69	22.99126
32	38.80353	70	22.66832
33	38.25849	71	22.34992
34	37.72109	72	22.03598
35	37.19125	73	21.72646
36	36.66885	74	21.42128
37	36.15379	75	21.12039
		76	20.82373
		77	20.53123
		78	20.24285
		79	19.95851
		80	19.67817
		81	19.40176

  

82	19.12924
83	18.86054
84	18.59562
85	18.33442
86	18.0769
87	17.82298
88	17.57264
89	17.3258
90	17.08244
91	16.8425
92	16.60592
93	16.37267
94	16.1427
95	15.91595
96	15.69239
97	15.47197
98	15.25465
99	15.04038
100	14.82912
	Maximum residue
	-----
	55.26599
	Average residue
	-----
	30.57727

DAILY ACCUMULATED PESTICIDE RESIDUES---MULTP. APPL.

Chemical name -----		VINCLOZOLIN-PODS/SEEDS	
Initial concentration (ppm) -----		6	
Half-life -----		49	
A number of application -----		2	
Application interval -----		7	
Length of simulation (day) -----		100	
DAY	RESIDUE	37	7.480095
(PPM)		38	7.375027
---		39	7.271435
-----		40	7.169299
		41	7.068597
		42	6.969309
0	6	43	6.871416
1	5.915723	44	6.774899
2	5.832629	45	6.679736
3	5.750702	46	6.585911
4	5.669926	47	6.493404
5	5.590285	48	6.402195
6	5.511762	49	6.312269
7	11.43434	50	6.223604
8	11.27373	51	6.136186
9	11.11538	52	6.049996
10	10.95925	53	5.965016
11	10.80531	54	5.88123
12	10.65354	55	5.79862
13	10.5039	56	5.717171
14	10.35635	57	5.636866
15	10.21089	58	5.557689
16	10.06746	59	5.479624
17	9.92605	60	5.402656
18	9.786627	61	5.326769
19	9.649161	62	5.251948
20	9.513626	63	5.178177
21	9.379996	64	5.105443
22	9.248241	65	5.03373
23	9.118338	66	4.963025
24	8.990259	67	4.893313
25	8.863979	68	4.82458
26	8.739473	69	4.756813
27	8.616716	70	4.689997
28	8.495684	71	4.62412
29	8.376351	72	4.559169
30	8.258695	73	4.495129
31	8.142691	74	4.431989
32	8.028316	75	4.369736
33	7.915548	76	4.308358
34	7.804364	77	4.247841
35	7.694741	78	4.188175
36	7.586659	79	4.129347
		80	4.071345
		81	4.014157
		82	3.957774
		83	3.902182
		84	3.847371
		85	3.793329
		86	3.740047
		87	3.687513
		88	3.635718
		89	3.584649
		90	3.534298
		91	3.484655
		92	3.435708
		93	3.387449
		94	3.339868
		95	3.292956
		96	3.246702
		97	3.201098
		98	3.156134
		99	3.111802
		100	3.068093
		Maximum residue:	
		11.43434	
		Average residue:	
		6.326332	